

Forward Collision Accidents



The (Swiss) Insurance Company
Perspective





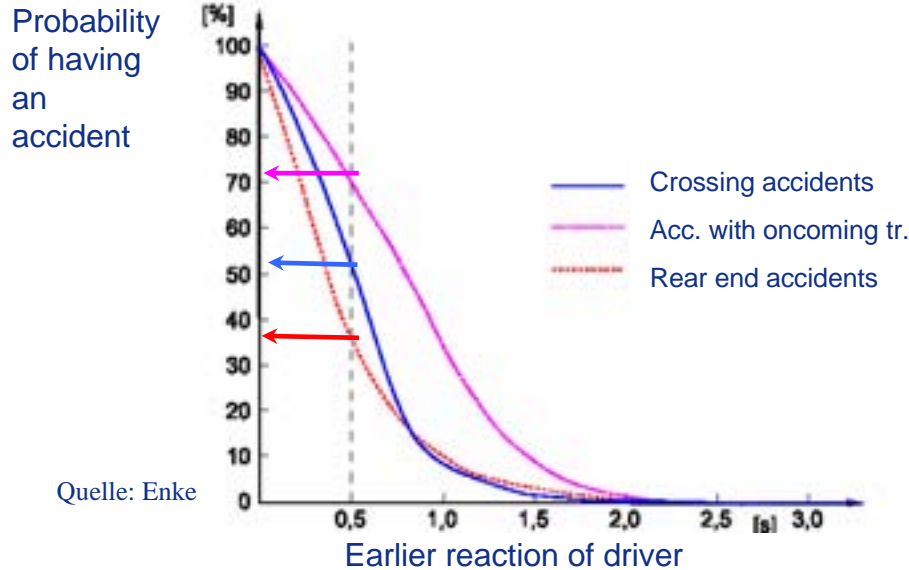
- Forward collision accidents
- CEA study
- P-safe group
- AXA Winterthur figures

Forward collision accidents initial comments

- Forward collision accidents are most often low speed accidents
- Forward collision accidents lead in some cases to "whiplash"
- In about 10% - 20% of initial whiplash cases, the healing process is not as expected and people are unable to work for the rest of their lives.
- The diagram shows, that in the German speaking part of Switzerland the costs for whiplash in 2003 were more than four times higher than in 1990, whereas the costs in the French and Italian speaking parts only have doubled.
- Forward collision accidents are – looking at costs – linked to the whiplash discussion, knowing that not only forward collision accidents lead to whiplash.

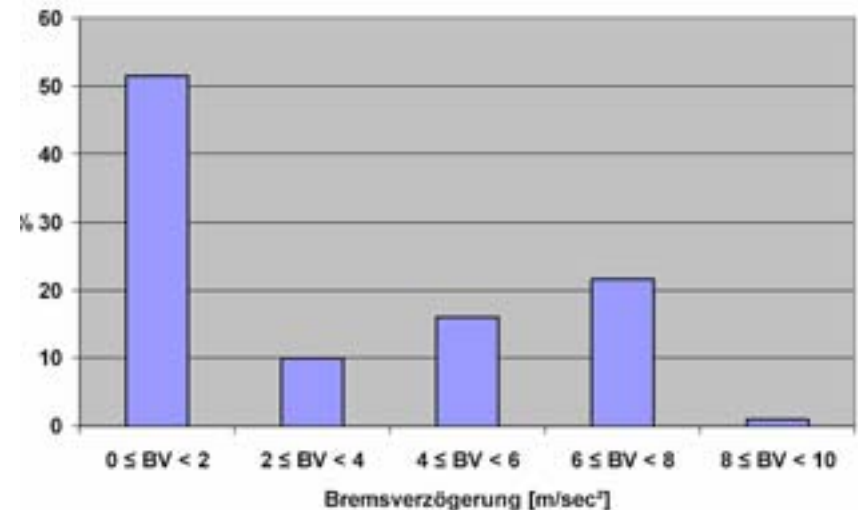


Pre crash phase and braking behaviour

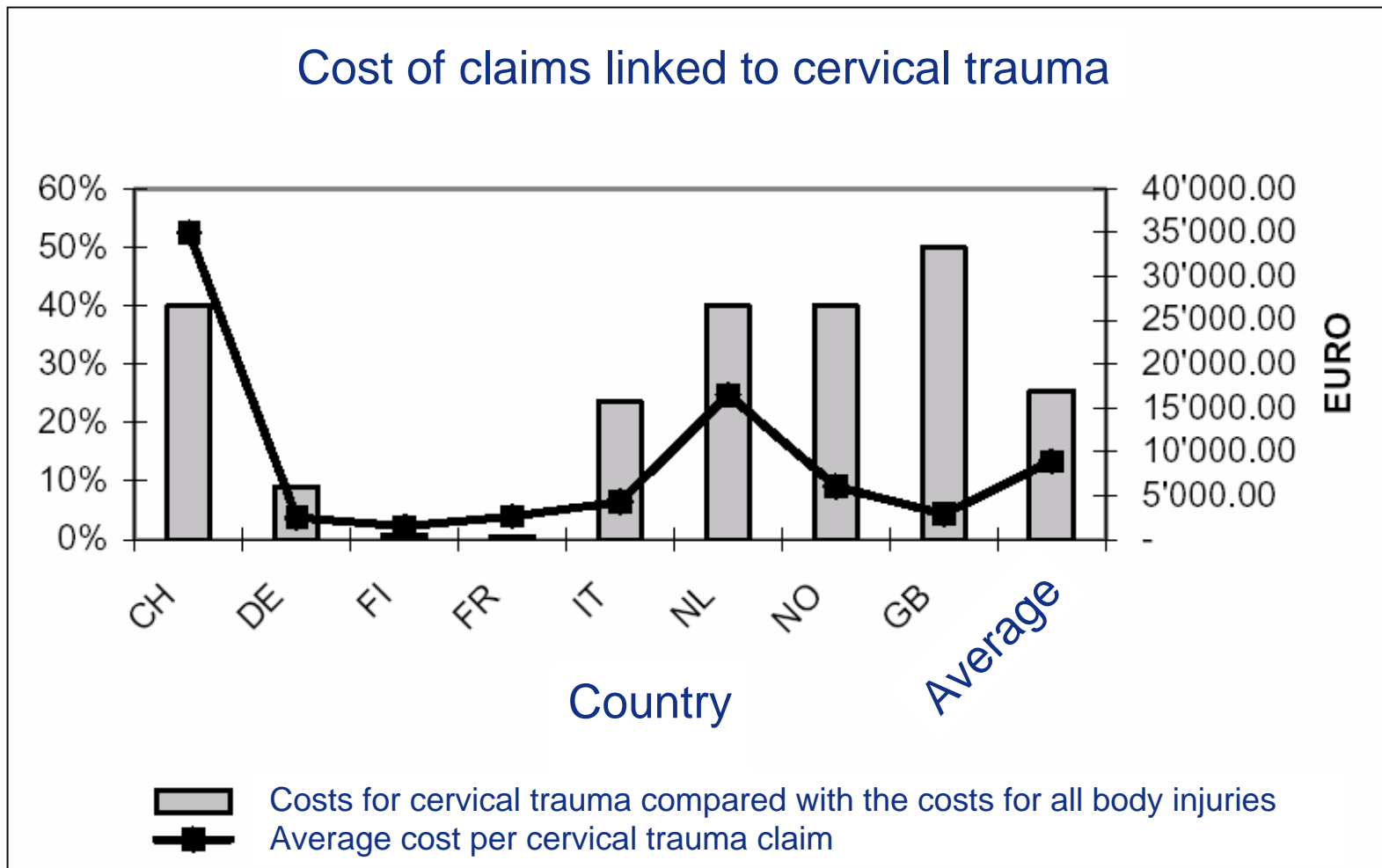


A study from Enke shows that compared to crossing accidents and accidents with oncoming traffic, rear end accidents (or forward collision accidents) have the highest potential for driver warning systems. If people would react 0.5s earlier, more than 60% of the accidents could be prevented.

A study from Langwieder, based on GIDAS, the German In-Depth Accident Study, analysed the braking behaviour before an accident happened. Result: more than 50% did not brake at all (0-2 m/s²).



CEA Comparative Study 2004 Minor Cervical Trauma Claims





- Costs for cervical trauma vary a lot between countries
- Costs per claim are highest in Switzerland
- In Switzerland, Norway, Great Britain and the Netherlands about 40% to 50% of all costs for body injuries are spend for minor cervical trauma.



- RCAR – the Research Council for Automobile Repair consists of research centers which are paid by insurance companies.
- The subgroup p-safe is interested in primary safety (advanced driver assistant systems) and its influence on the insurance industry.
- p-safe focuses on the systems: ESC, LDW and CMBS (collision mitigation braking systems)
- The most active members at the moment are:
 - Thatcham, UK
 - Folksam, S
 - CESVIMAP and Centro Zaragoza, E
 - GDV, D
 - AXA Winterthur, CH

Results from Folksam

In rear-end crashes, most often occurring at lower speed, there is a larger potential for improvement. Taking the risk curves and crash distribution presented in figures 9 and 11, the same analysis can be made as for the frontal impacts. If a system would be able to reduce the impact speed with 20 km/h, the effect on the number of occupant with long-term whiplash symptoms could be reduced significantly. Figure 27 shows the dose-response model for this rear-end crash scenario. Since all rear-end crashes can be regarded as car-to-car crashes, the reduction in delta-v would be approximately half of the reduction in impact speed. The number of occupants with symptoms lasting longer than 1 month was 24. Reducing the impact speed with 20 km/h would mean a reduced delta-v with 10 km/h. That would lead to a reduction in injured occupants with 83%. One manufacturer has presented a system that automatically brakes in rear end crashes with 15 km/h at impact speeds below 30 km/h (Volvo City Safety). The effect would be somewhat lower, approximately 60%, with the same assumptions.

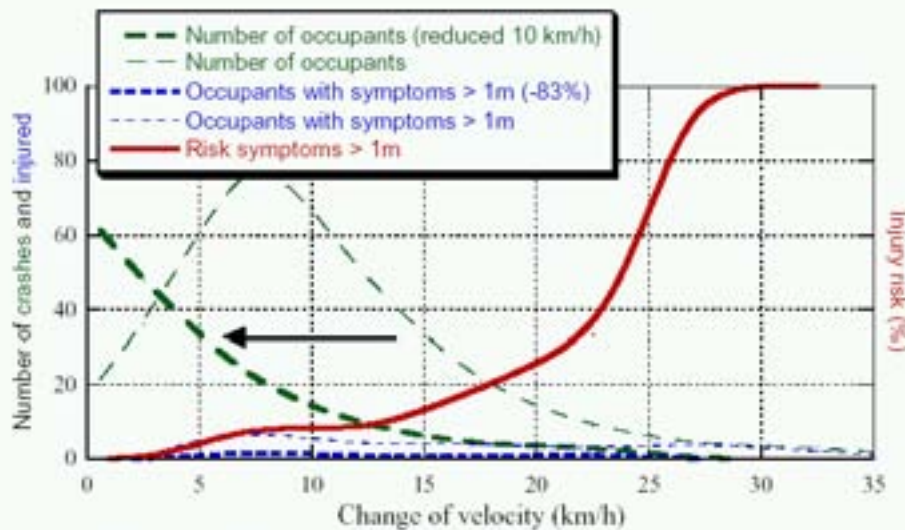
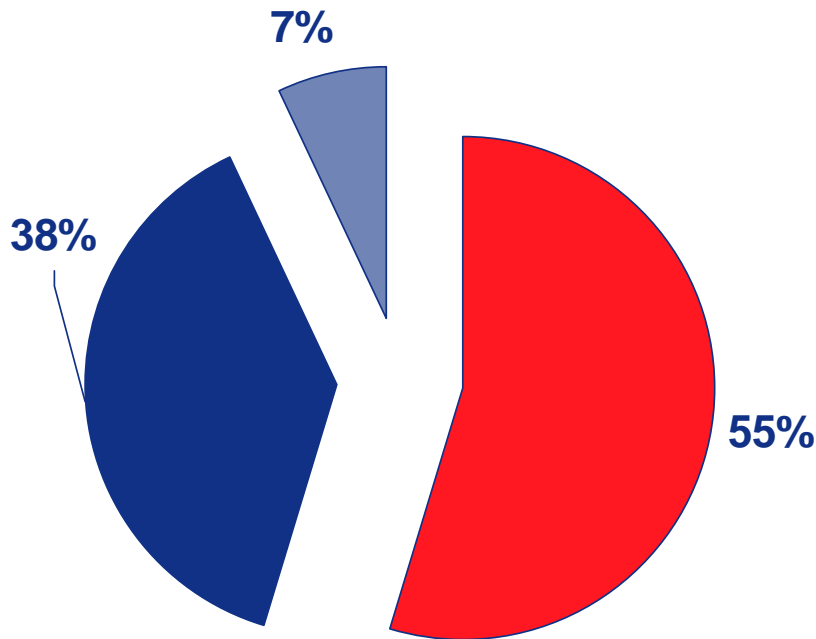


Fig. 27 – Dose-response model for rear-end crashes

Source:
Bertil Aldman Memorial Lecture,
IRCOBI 2008

(DOSE-RESPONSE MODELS AND
EDR DATA FOR ASSESSMENT OF
INJURY RISK AND
EFFECTIVENESS OF SAFETY
SYSTEMS,
Anders Kullgren)

AXA Winterthur Reconstructed accidents 2000-2004



■ Delta-v < 10 km/h ■ 10km/h < Delta-v < 15 km/h ■ 15km/h < Delta-v

Rear end accidents (forward collision accidents) are reconstructed if the damages to the car and the symptoms of the injured person are not consistent.

More than half of all cases are rear end accidents with a delta-v of less than 10 km/h!

Only 7% were not low speed accidents.



- A forward collision warning system will have a high potential in preventing rear end accidents.
- Most often the cause of such accidents is inattention.
- The potential in saving costs differs from country to country, or even from region to region.
- AXA Winterthur is very interested in having a system which, ideally, warns the driver and brakes automatically, if the driver does not react.

Thank you /